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information concerning wrecks, ice, etc., gained during the preceding month. Through the kindness of Commander Bartlett, we are enabled to present a copy of the chart for May, reduced to two-fifths of the original, from a special print in black. As stated in the legend, every thing concerning the current month (in this case, May) is printed in blue in the regular issue; thus the direction and force of the winds are given, with the probable limits of the trades and of floating ice. On the May chart, the sailing-route to the equator, and the safe route to England, are added. On the other hand, information received concerning floating wrecks, ice, and notable storms or fogs, is printed in red. Only the geographic outline, the currents, and the permanent wording, appear in black on the original charts. The first four numbers, December to March, were accompanied by a few pages of letter-press, giving information concerning wrecks, storms, etc.; but it has later been found possible to present sufficient detail on the chart itself. Although the publication of these charts was duly authorized, no special appropriation was made for the collection of the information that they are designed to show. The co-operation of seafaring men, and those interested in the weather of the ocean, is therefore solicited. The distribution of the charts from the branches of the hydrographic office lately established in New York, Philadelphia, Baltimore, and Boston, as well as from the central office in Washington, will, doubtless, prove a strong incentive to a more complete reporting of the desired observation.

Having thus considered what has been already accomplished for the North Atlantic, we may give a few lines to studies now in progress in different parts of the world. Germany, England, and Holland have entered into a kind of co-operative agreement by which each party is to take charge of a relatively small part of certain oceans, and examine all the observations, furnished from all the parties, with the utmost detail; this plan being the outcome of several meteorological congresses. So far as I can learn, the German government, through Dr. Neumayer of the Deutsche seewarte at Hamburg, is at work on the North Atlantic between latitudes  $20^{\circ}$  and  $50^{\circ}$ , from shore to shore, the results to be tabulated in one-degree squares. About one-eighth of this work has been published.<sup>1</sup> The British meteorological council, of which Gen. R. Strachey is chairman, and Mr. R. H. Scott, secretary, has about completed a series of sea-surface temperature charts of the three great oceans for the cardinal months, February, May, August, and November, and have on hand a similar set of barometrical charts. A more original undertaking is the preparation of daily synoptic charts of the North Atlantic, in charge of Capt. H. Toynbee, for the thirteen months beginning Aug. 1, 1882, and ending Aug. 31, 1883; this being the period covered

by the international circumpolar observations. It is estimated that there will be at least four hundred observations for each day; and from these it may at last be discovered what becomes of our Atlantic gales. The Indian meteorological service, in charge of Mr. H. F. Blanford, is studying the Indian Ocean north of the equator, lapping to the eastward over the area taken by the Dutch. The Dutch government, represented by Dr. Buys-Ballot of the Meteorological institute at Utrecht, has undertaken the investigation of the China seas ( $0^{\circ}$ – $30^{\circ}$  north latitude,  $100^{\circ}$ – $150^{\circ}$  east longitude), but the results have not yet appeared. The former work of this office on the surface temperatures of the Atlantic, although of much importance, has, perforce, been omitted in this review; nor has there been space to consider various essays on ocean surface temperatures by Petermann, Cornelissen, and Koldewey, which might well be compared with the results on our hydrographic charts. The winds furnish material enough for examination in one essay.

It is surely fitting that our government should bear its share in these invaluable studies, and we trust the work now approaching completion for the North Atlantic may be speedily followed by similar studies of the rich material in our possession from the other oceans.

W. M. DAVIS.

#### INVERTEBRATES OF THE TALISMAN EXPEDITION.

IN a communication to the French academy, Dr. Paul Fischer observes, that, during the voyage, attention was directed especially to determining whether the deep-sea fauna of the tropical seas is peculiar to the geographical region, or derived by emigration from arctic seas. By dredging in a north and south direction in the eastern Atlantic, and comparing the results from different latitudes with those obtained by others in northern seas, it was hoped to arrive at a satisfactory solution of the problem. The line upon which work was done extended from the mouth of the Charente, over thirty degrees of latitude, to Senegal.

It is known that the superficial and abyssal faunae of the seas of tropical Africa differ greatly. The genera are not the same: their respective assemblages have no parallel relations. If the remains of these two contemporaneous faunae were fossilized, it might be supposed that they belonged to two different epochs, or represented the population of two uncommunicating seas. The abyssal fauna of the coasts of the Sahara, Senegal, and islands of Cape de Verde, contains a number of mollusks common to the arctic seas which have an immensely wide distribution. Such are *Troschelia berniciensis*, *Chrysodomus islandicus*, *Scaphander puncto-striatus*, *Lima excavata*, *Malletia obtusa*, *Limopsis minuta*, *Syndosmya longicallis*, *Neaera arctica*, *N. cuspidata*, *Pecten vitreus*, and *P. septemradiatus*. These range from Iceland and Finmark, or northern European seas, in comparatively shallow water, southward to various

<sup>1</sup> *Deutsche seewarte. Resultate meteorologische beobachtung von deutschen und holländischen schiffen für eingradfelder des nordatlantischen Oceans. (Quadraten 146 und 147.)* Hamburg, 1880, 1881. These include the area between  $40^{\circ}$  and  $50^{\circ}$  north latitude, and  $10^{\circ}$  to  $30^{\circ}$  west longitude.

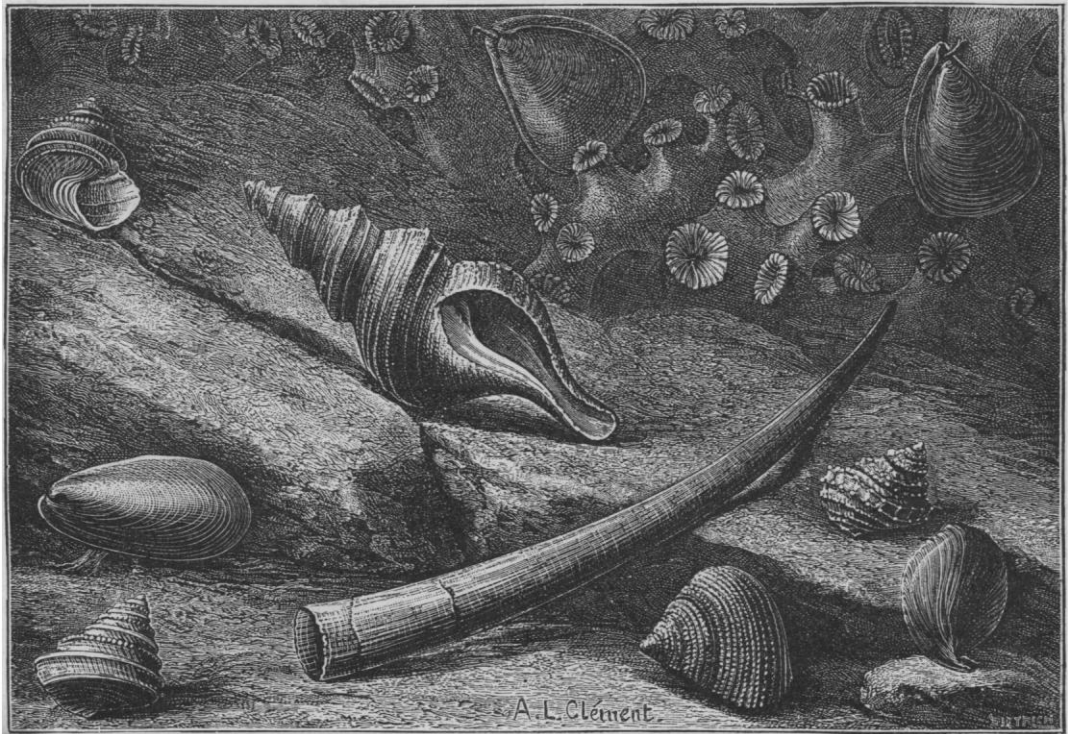
points on the line, terminating at Senegal. A blind *Fusus* was dredged in over twenty-five hundred fathoms. These instances are sufficient to show the extension of arctic forms into tropical regions, but with these are found a great number of mollusks yet unknown in the North Atlantic. The abyssal fauna of the African coasts is therefore not composed solely of arctic immigrants. Lovén has shown that the arctic species range at greater depths as they advance southward, — a fact confirmed by other naturalists, and by the researches of the *Talisman* party. It is probable, therefore, that the idea now generally entertained by malacologists is correct, that the range of

able forms first signalized by the U. S. fish-commission from deep water in the North Atlantic, among which may be mentioned *Pholadomya arata*, *Mytilimeria flexuosa*, etc.

W. H. DALL.

#### THE RELATION OF THE MOUND-BUILDERS TO THE HISTORIC INDIANS.

IN *Kosmos*, vol. xiv., parts ii. and iii., will be found two papers, by Dr. Emil Schmidt, on the relation of the mound-builders to the modern Indians. The reputation of the author as a student of American



DEEP-SEA MOLLUSKS LIVING AT A DEPTH OF FROM 1,500 TO 2,500 METRES. (Taken from *La Nature*.)  
Calliostoma, Modiola, Fusus, Dentalium, Turbo, and Terebratula are represented.

these animals is determined by temperature rather than by the intensity of light or other factors. The investigations of the *Talisman* have considerably enlarged the number of Atlantic stations for mollusks reputed peculiar to the Mediterranean. Among these are *Cassidaria tyrrenna*, *Umbrella mediterranea*, *Xenophora mediterranea*, *Carinaria mediterranea*, *Pyramidella minuscula*, *Pecten pes-felis*, *Spondylus Gussoni*, and a number of others. Dr. Fischer concludes that the Mediterranean has very few peculiar species, and appears to have been populated in great part by colonists from the Atlantic, after the geological period in which communication with the Indian Ocean was cut off.

Lastly, the expedition obtained some of the remark-

aboriginal history will give to these papers great weight in Germany. It is important, therefore, in the interests of true science, to know what they contain, to indorse them where they are in harmony with the latest investigations, and to correct any mistakes into which the author may have fallen.

After paying a just compliment to the Peabody museum, the Smithsonian institution, and the Bureau of ethnology, and expressing his regret that the laity are still disposed to behold something wonderful and mystical in every thing that the mounds reveal, Dr. Schmidt passes in review the history of mound exploration for the last century. Capt. Hearne, in 1791, expressed the opinion that the earth-works could not have been the production of hunting Indians,